

Search for VLQs decaying to light SM quarks in Run 2 data from the ATLAS Experiment

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Vector-like quarks (VLQs) are a common feature of many Standard Model (SM) extensions that propose additional particles beyond the SM to resolve some of the underlying inadequacies such as the hierarchy problem, matter-antimatter asymmetry, dark matter, etc. A large interest exists in looking at VLQs that decay primarily to a SM boson and third-generation quark, but there exists the possibility that VLQs could decay to light SM quarks. Searches of this nature have largely been overlooked since Run 1 of the Large Hadron Collider (LHC). This presentation will focus on the analysis of pair production of VLQs that decay to a W-boson and light quark using the full Run 2 dataset collected by the ATLAS detector. Pair production provides a model-agnostic lens to evaluate the possibility of VLQs while probing the semi-leptonic decay channel.

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Primary authors: ALEGRIA, Zackary (Oklahoma State University); ALEGRIA, Zackary (Oklahoma State University)

Presenter: ALEGRIA, Zackary (Oklahoma State University)

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